haviors of the western burrowing owl (Athene cunicularia hypugaea) are virtually unexplored. With the aid of a night-vision scope, these facets of the burrowing owls' behaviors were examined in 1992 and 1993 in Adams County, Colorado. Crepuscular/nocturnal behavioral data were then compared to analogous diurnal data. Due to the change in foraging responsibility associated with feeding hatchlings, diurnal and crepuscular/nocturnal behaviors were separated into prehatch and posthatch periods for analysis. Several predictions of foraging behavior were based on central-place foraging theory: males should have longer foraging bouts than females, foraging bouts resulting in a small mammal capture should be longer than those with an insect capture, and males should capture proportionally more small mammals than females. Foraging results indicated male foraging bouts ( $\bar{x} = 528 \text{ sec}$ ) are longer (P = 0.0001) than female  $(\bar{x} = 196 \text{ sec})$ . Foraging bouts resulting in a small mammal capture ( $\bar{x}$  = 1063) were longer (P = 0.0001) than those resulting in an insect capture ( $\bar{x} = 220 \text{ sec}$ ). Males captured proportionally more (P < 0.05) small mammals (21.4%) than females (4.9%). Furthermore, the majority of the burrowing owl foraging activity, which was once considered to be predominantly diurnal, occurs at dusk and throughout the night. Due to principle foraging activity occurring during dusk and after nightfall, calculations of home ranges for burrowing owls should include nocturnal data points. Both insect and small mammal prey bases are important aspects of burrowing owl habitat and should be taken into consideration when managing these owls.

OCCUPANCY AND PRODUCTIVITY OF NORTHERN SAW-WHET OWLS USING NEST BOXES IN SOUTHWESTERN IDAHO

RAINS, C. Department of Biology, Boise State University, Boise, ID 83725 U.S.A.

In 1982, BLM began placing nest boxes in riparian areas around C.J. Strike Reservoir and the Snake River Birds of Prey Area for western screech owls (Otus kennicotti). In 1986, northern saw-whet owls (Aegolius acadicus) began using these nest boxes and in 1987, three pairs of sawwhet owls successfully bred. In 1989, an additional three pairs of saw-whet owls occupied wood duck (Aix sponsa) boxes at Lake Lowell near Nampa, Idaho and, there have been three successful breeding attempts in 1991, four successful breeding attempts in 1992, and only a single successful attempt in 1993. Adult saw-whet owls were either captured in the nest box or in a mist net placed in front of the nest box. Over the 6-yr period that the nest boxes have been occupied, the mean hatch date has been 7 April and a total of 61 young have fledged for an average of 1.9 young/breeding pair. The clutches ranged in size from 5-7 eggs with an average clutch size of 5.8 eggs.

## PRODUCTIVITY AND NESTING DENSITY OF COOPER'S HAWKS IN WISCONSIN

ROSENFIELD, R.N. Department of Biology, University of Wisconsin, Stevens Point, WI 54481 U.S.A. J. BIELE-FELDT, J. AFFELDT AND D. BECKMANN

There are no long-term data on the breeding ecology of the Cooper's hawk (Accipiter cooperii) in the eastern U S, especially from suburban areas. Such information is essential to resource agencies charged with managing the species in the east, where it is listed as threatened or endangered by several states. Over 14 yr, we found means for clutch and brood sizes of 4.3 eggs (N=255) and 3 8 bandable young per successful nest (N=318), respectively Of 378 nests, 79% produced young. The highest nesting density (1 nest/272 ha) known for the species was found in a central Wisconsin suburb. Nest area reoccupancy can be an adequate measure of population stability in some circumstances.

## RAPTORS ASSOCIATED WITH AIRPORTS AND AIRCRAFT

SATHEESAN, S.M. Bombay Natural History Society, Horn-bill House, S.B. Singh Road, Bombay 400023, India

An ecological study of bird hazards at 22 Indian aerodromes was conducted between 1980 and 1988. An analysis of 552 bird- and bat-aircraft strike remains identified through microscopical and macroscopical methods between 1966 and July 1993, revealed that 55.43% of the incidents were caused by 18 species of raptors (of a total of 80 bird and bat species). Vultures and black kites (Milvus migrans) which caused 48.36% of them, are the commonest of the raptors in the Indian subcontinent and the economic loss due to their collision with aircraft ranged from over a dozen air crashes to severe damage to engine and other parts. The superabundant food in urban areas available at garbage and carcass dumps as well as sanitary landfills has attracted multitudes of raptors which took to scavenging following principles of ergonomics. Uncontrolled population explosion of scavenging raptors caused by this artificial food supply in cities has led to their collisions with aircraft and power lines as well as their interactions with utility structures. An aerodrome with its openness, vastness and tranquillity as well as natural plant and animal food for birds proves to be a favorable habitat for several raptors for feeding, resting, roosting and nesting. Inviting raptors to the scavenging table will prove catastrophic not only to the raptors and their natural prey but also to man and nature in the long run. Conserving raptors at the apex of food pyramids, preserving natural habitats of raptors and their prey as well as denying artificial habitats and food to them are very essential to maintain the balance in nature.